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Nutrition Assistant Application

NALAIYATHIRAN PROJECT REPORT

SUBMITTED BY

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BACHELOR OF ENGINEERING

In

COMPUTER SCIENCE AND ENGINEERING

IDHAYA ENGINEERING COLLEGE FOR WOMEN

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INTRODUCTION

Diet and nutrition app is a type of nutrition tracking app that helpsusers lose weight, be healthy, and get stronger. There are differentnutrition apps, including a calorie counter, diet trackers, nutritionplanner apps, and marketplace platforms that connect users andnutrition coaches.The nutrition and diet planner app is becoming popular among users because of its great usability and amazing convenience

object Overview

Nutrition Assistant Application aims at building a web App that automatically estimates food attributes such as ingredients and nutritional value by classifying the input image of food. It helps to plan and prepare nutritious meals for people who need them. It may also be responsible for educating patients about healthy eating habits. Our method employs Clarifai's AI-Driven Food Detection Model for accurate food identification and Food API's togive the nutritional value of the identified food. User interacts withthe Web App to Load an image.The image is passed to the serverapplication, which uses Clarifai's AI-Driven Food Detection ModelService to analyze the images and Nutrition API to provide nutritional information about the analyzed Image. Nutritional information of the analyzed image is returned to the app for display

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A web based tool is being planned for therapeutic nutrition prescriptions in clinical settings. The cloud based system would have the ability to calculate the nutritional requirements and to guide first line nutritional management to patients and clients automatically. Also, it serves as an electronic medical and dieteticrecord, and personalized nutrition consultation approach can be client can converse to his/ her personal dietitian at their own convenient setting.

Purpose:

- Providing dieticians with the facility's meal and menuplanning.
- Obtaining dietary information and assessing the nutritionalhabits of patients.
- Coordinating meal plans with nutritionists and healthcareprofessionals.
- Performing ongoing nutrition assessments, including themeasurement of caloric intake and activity levels.

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LITERATURE SURVEY

Nutrition and clinical dietetic services provide evidence-based support which has become essential for maintaining healthy lifestyle and avoiding malnutrition among population. National health with digital technology integration is gaining importance inthe current COVID-19 pandemic scenario. Digital health technologies offer valuable means for community to create and share information about healthcare.

This research intended to study the effects of utilizing games in health e-learning network on teaching third graders in elementary schools about nutrition. The studied groups of this research were 2 classes of 33 third graders; the two classes were separated intoexperimental and control group. The experiment was implemented in a four-week duration. The experimental group learned the knowledge of nutrition based on game playing on a national health e-learning network, whereas the control group waslectured with multi-media slide show.

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Problem Statement Definition:

Due to the ignorance of healthy food habits, obesity rates are increasing at an alarming speed, and this is reflective of the risks to people's health. People need to control their daily calorie intakeby eating healthier foods, which is the most basic method to avoid obesity. However, although food packaging comes with nutrition (and calorie) labels, it's still not very convenient for people to refer to App-based nutrient dashboard systems which can analyse real-time images of a meal and analyse it for nutritional content which can be very handy and improves the dietary habits, and therefore, helps in maintaining a healthy lifestyle. The main objective of this project is to building a web App that automatically estimates food attributes such as ingredients and nutritional value by classifying the input image offood.

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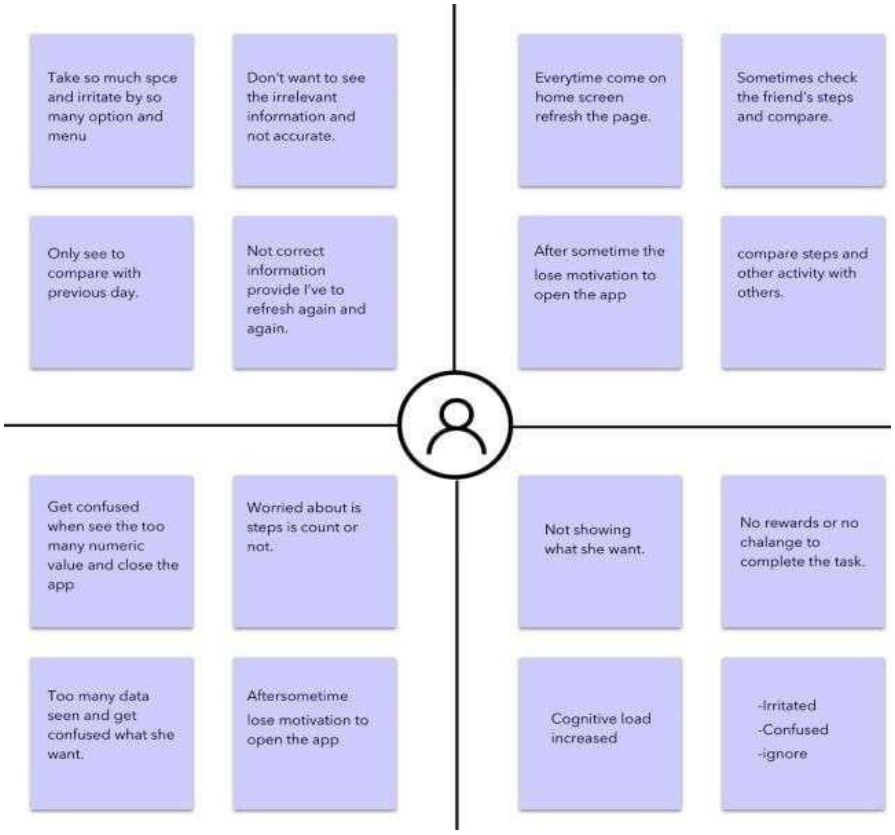
IDEATION & PROPOSED SOLUTION

Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes.

It is a useful tool to helps teams better understand their users.
Creating an effective solution requires understanding the true problemand the person who is experiencing it.

The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.



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Ideation & Brainstorming:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount .

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Proposed Solution:

Nutrition Assistant:

- In this application help dieticians with providing Proper nutrition at healthcare facilities.
- Nutrition assistant can be counsel patients on any dietary issues and health eating habits.
- And develop the nutrition plan based on the patient budget and tastes.
- Daily monitor the effect of the nutrition plan and their changes.

Nutrition assessment:

- Surveys
- Surveillance
- Screening
- Interventions

Goal:

- To provide the valuable diet practice and healthcare tips for patients happy life

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Problem Solution fit:

Now a day people are facing many nutrition problem. A variety of medical problem can affectthe appetite. Many people become frustrated when they know they need to eat to get well but they gain aren’t hungry or when they gain weight because they are fatigued and unable to exercise. Based on the health problem the nutrition will provide some guidance to the patient. The appetite ,diet, and fat control .based on the problem the nutrition will provide a guidelines.in nutrition assistant application the nutrition meet the patient and ask their problem .this nutrition and patient meet will be weekly one are twice . on the time nutrition guide the patient how the patient wants to take the food and when they take the food and which typeof food they take . The nutrition provide a meal guidelines ,snack ,dining ,weight loss , guide avoid high calorie snacks and recipes these type of guidance to patient . But in this nutrition assistant application nutrition provide a guidance to patient in online mode .in this mode have many difficulties so the nutrition guidance in without network (offline)also.

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REQUIREMENT ANALYSIS

Functional requirement:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through E-mail and Phone number
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Profile Completion	Get personal details like height, weight, etc.
FR-4	Gather meal image	Upload photo Take live photo of the meal
FR-5	Display calorie information	Integrate Clarifai API to get name of the food Integrate Nutrition API (rapid API) to collect calorie information

Non-Functional requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Provide user friendly UI Simple and intuitive design
NFR-2	**Security**	Comprehensive authorization and authentication scheme for each system actor
NFR-3	**Reliability**	The system must perform without failure in 95 percent of use cases
NFR-4	**Performance**	The landing page supporting several users must provide 5 seconds or less response time
NFR-5	**Availability**	Uninterrupted services must be available all time except the time of server updation.
NFR-6	**Scalability**	Provide horizontal or vertical scaling for higher workloads

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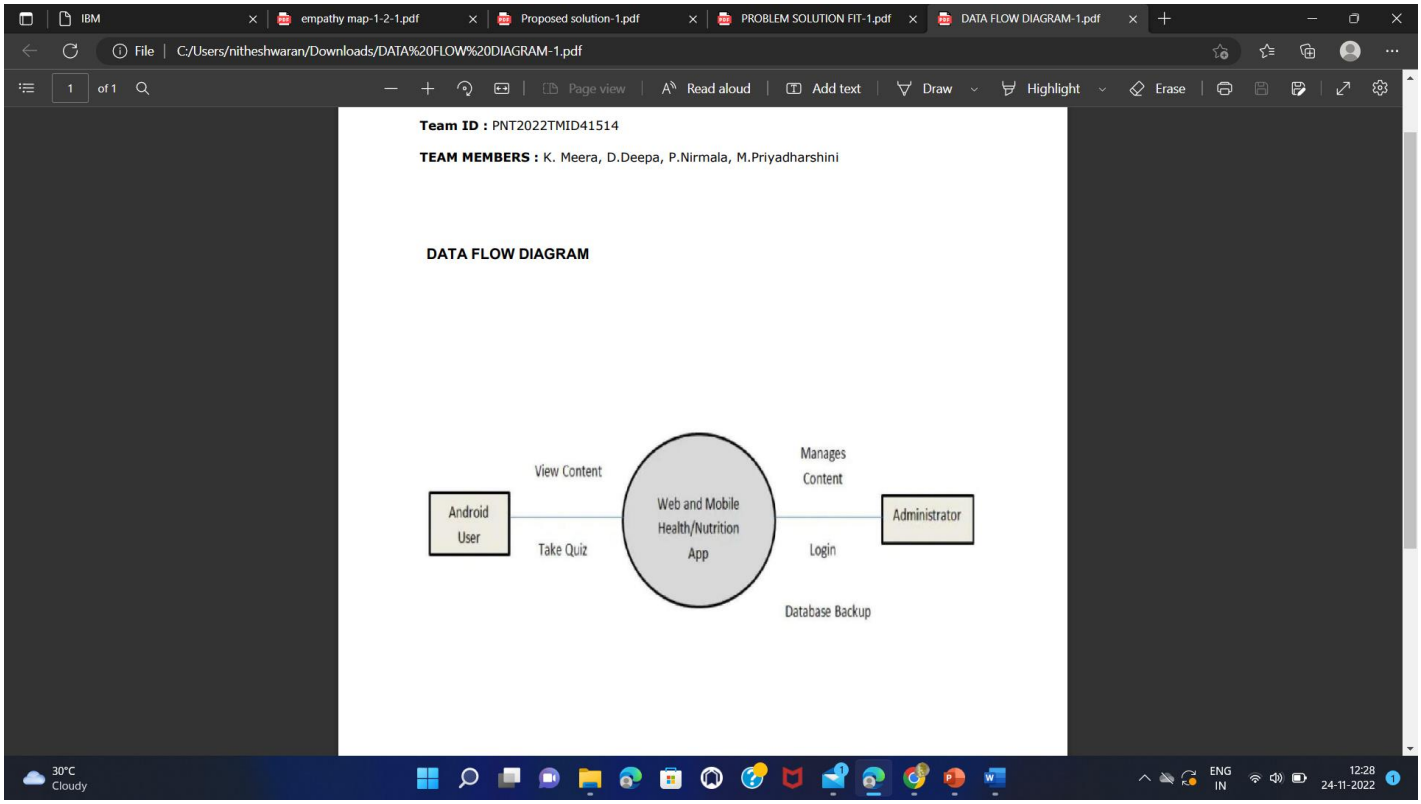
PROJECT DESIGN

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and wheredata is stored.



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Solution & Technical Architecture:

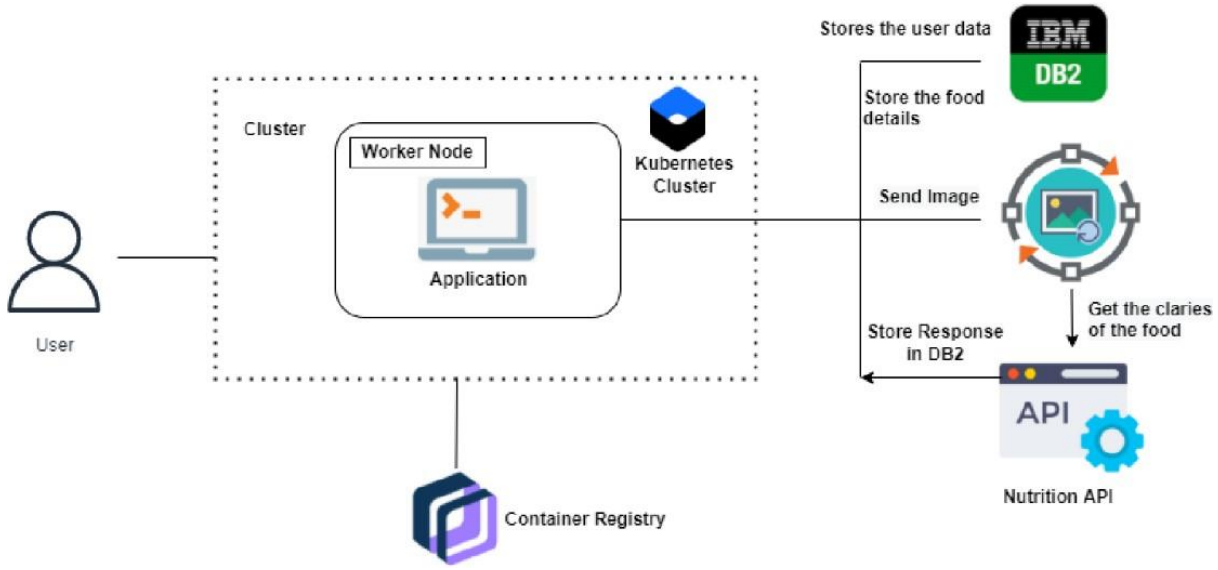

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

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Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

Solution Architecture:

Solution architecture is a complex process – with many sub-processes -
-that bridges the gap between business problems and technologysolutions. Its goals are to:

• To establish a smart fashion recommender application to recommendusers product based on the user requirements.

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• this architecture includes cloud service and collection of data, fromwhich user can decide their desirable product.

• The bot will assist users in receiving product recommendation.

• The user will be able to view the product in their 3D model and decide accordingly.

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PROJECT PLANNING & SCHEDULING

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	User Panel	USN-1	The user will login into the website and go through the products available on the website.	20	High	Lubna Fathima N Farhat Jabeen A Ganga M Sugaiel Fathima A
Sprint-2	Admin Panel	USN-2	The role of the admin is to check out the database about the stock and have a truck of all the things that the users are purchasing.	20	High	Lubna Fathima N Farhat Jabeen A Ganga M Sugaiel Fathima A
Sprint-3	Chat Bot	USN-3	The user can directly talk to Chatbot regarding the products. Get the recommendations based on information provided by the user	20	High	Lubna Fathima N Farhat Jabeen A Ganga M Sugaiel Fathima A
Sprint-4	Final Delivery	USN-4	Container of applications using docker Kubernetes and development the application. Create the documentation and final submit the application	20	High	Lubna Fathima N Farhat Jabeen A Ganga M Sugaiel Fathima A

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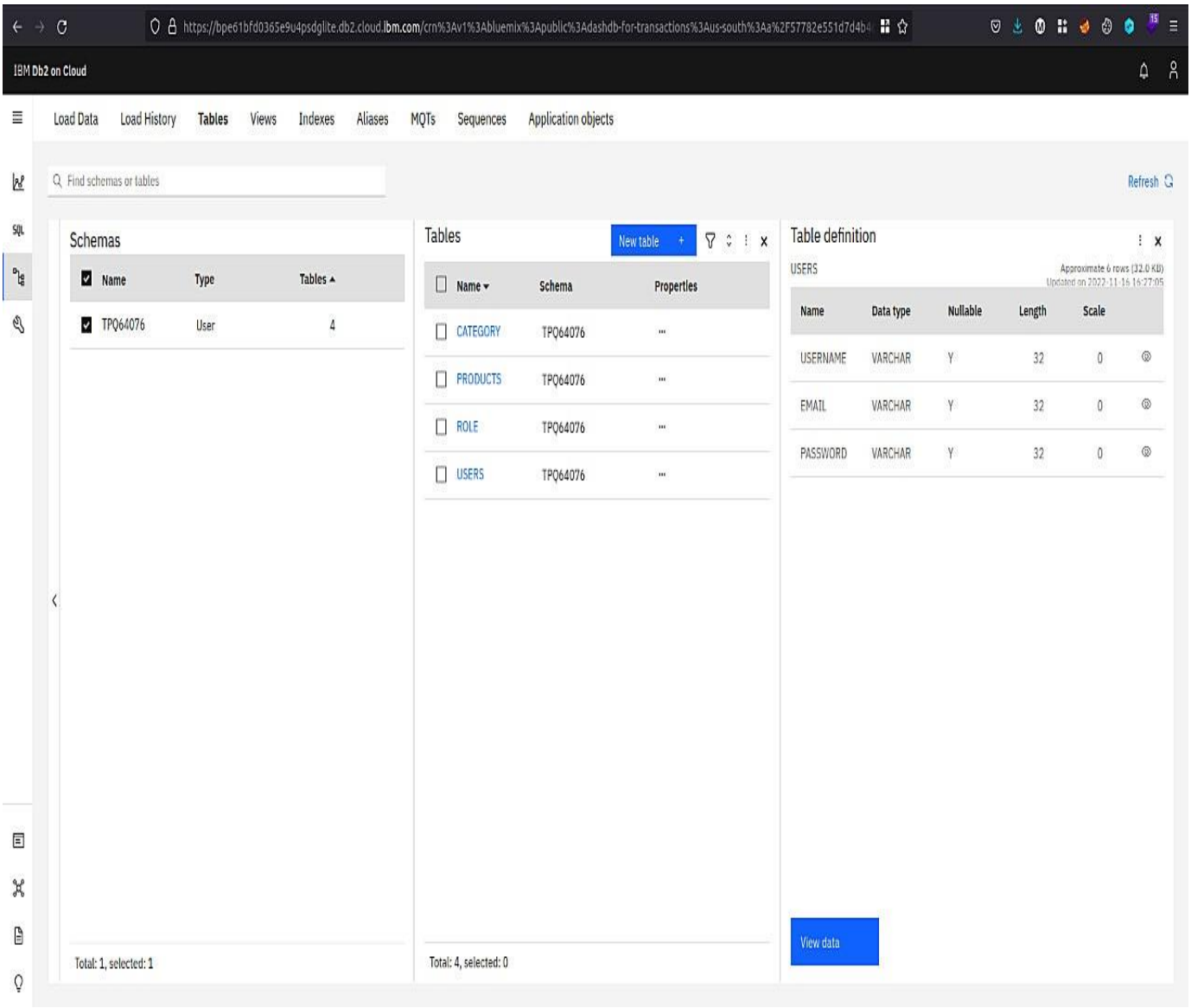
7.1 Database Schema:

IBM Db2 ON CLOUD:



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TESTING

Test Cases:

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Commnets	TC for Automation(Y/N)	BUG ID	Executed By
LoginPage_TC_OO1	Functional	Home Page	Verify user is able to see the Login/Signup popup when user clicked on My account button	Need to open the website and should have an basic knowledge about that website	1.Enter URL and click go 2.Click on My Account dropdown button 3.Verify login/Singup popup displayed or not	Executed local host	Login/Signup popup should display	Working as expected	Pass		Yes		Vijaya R
LoginPage_TC_OO2	UI	Home Page	Verify the UI elements in Login/ Signup popup	Need to register your self with basic details such as email address	1.Enter URL and click go 2.Click on My Account dropdown button 3.Verify login/Singup popup with below UI elements: a.email text box b.password text box c.Login button d.New customer? Create account link e.Last password? Recovery	Executed local host	Application should show below UI elements: a.email text box b.password text box c.Login button with orange colour d.New customer? Create account link e.Last password? Recovery password link.	Not Working as expected	Fail	Steps are not clear to follow	NO	BUG-1	Manju P
LoginPage_TC_OO3	Functional	Home page	Verify user is able to log into application with Valid credentials	in order to check for the valid credentials in login page. The user must sign in to the account	1.Enter URL(https://shopenzer.com/) and click go 2.Click on My Account dropdown button 3.Enter Valid username/email in Email text box 4.Enter valid password in		User should navigate to user account homepage	Working as expected	pass		yes		Shermiya K
LoginPage_TC_OO4	Functional	Login page	Verify user is able to log into application with InValid credentials	verify the login details with signin details.	1.Enter URL(https://shopenzer.com/) and click go 2.Click on My Account dropdown button 3.Enter InValid username/email in Email text box 4.Enter valid password in	Username: shermi@gmail password: shermi@123	Application should show 'Incorrect email or password ' validation message.	working as expected	pass		Yes		Retna M
LoginPage_TC_OO4	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter URL(https://shopenzer.com/) and click go 2.Click on My Account dropdown button 3.Enter Valid username/email in Email text box 4.Enter Invalid password in password	Username: retna@gmail.com password: retna@123	Application should show 'Incorrect email or password ' validation message.HIDHH	Working as expected	pass		Yes		Retna M
LoginPage_TC_OO5	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter URL(https://shopenzer.com/) and click go 2.Click on My Account dropdown button 3.Enter InValid username/email in Email text box 4.Enter Invalid password in password	Username: Vijaja password: vij@123	Application should show 'Incorrect email or password ' validation message.	Working as expected	pass		Yes		Vijaya R

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User Acceptance Testing:

UAT Execution & Report Submission

Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the Smart Fashion Recommender Application project at the time of the release to User Acceptance Testing (UAT).

Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how theywere resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Model	1	2	1	0	3
Duplicate	1	0	0	0	1
External	2	0	0	1	3
Fixed	7	2	3	0	12
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	1	0	0	1
Totals	11	5	6	2	23

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Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Hypothesis Condition	2	0	0	2
Train Test Split	5	2	0	3
Hyper Tuning Parameter Test	4	0	0	4
ConfusionMatrix	1	0	0	1
Logistic Regression	1	0		1
Final Report Output	6	2	0	4
SVM Model	1	0	0	1

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ADVANTAGES & DISADVANTAGES

Advantages:

The major advantage of this tool is that they can help us to eathealthier.

- It is also easy to track our progress.
- It provides general awareness of nutrients in food.

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Disadvantages:

The tool can be quite expensive as it requires cameras and otherexpensive devices to capture images and process it.

- These tool may not always be 100% accurate.
- We might avoid cetain healthy foods that are difficult to add intothe food tracker.

CONCLUSION

In this project we developed a tool which recognises our health and calorific value.It helps us to eat nutritional food.The diet chartwill be provided to individual users based on user's calorific value.It allows the users to upload their food images and give suggestion to that food. It also does not require the user to have any device on them to use it. Further this technology can be extended to other industries like it can be used by presenters, by teachers for show images in the classroom, etc.

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FUTURE SCOPE

The tool can be made quicker by increasing the recognitionspeed.

- They can work with a licensed healthcare provider to help individuals with previously diagnosed disease recognize biochemical imbalances and toxicity which lead to poor health.
- Voice commands can also be added to further increase thefunctionality.

In summary, our study shows different challenges that health- focused nutritional assistance systems face when being used inthe long term. Our findings can be used to improve future systemregarding their impact in the long-term and to postulate more long-term evaluation of recommender approaches.

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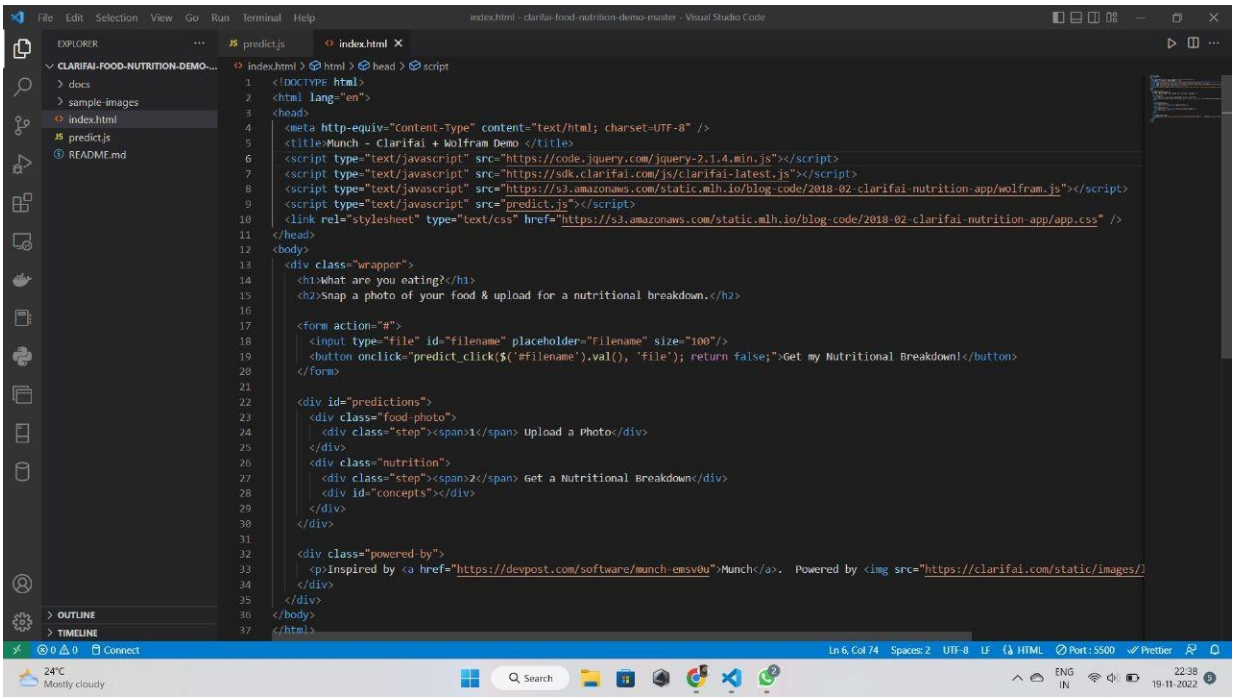
8. APPENDIX

Source Code:



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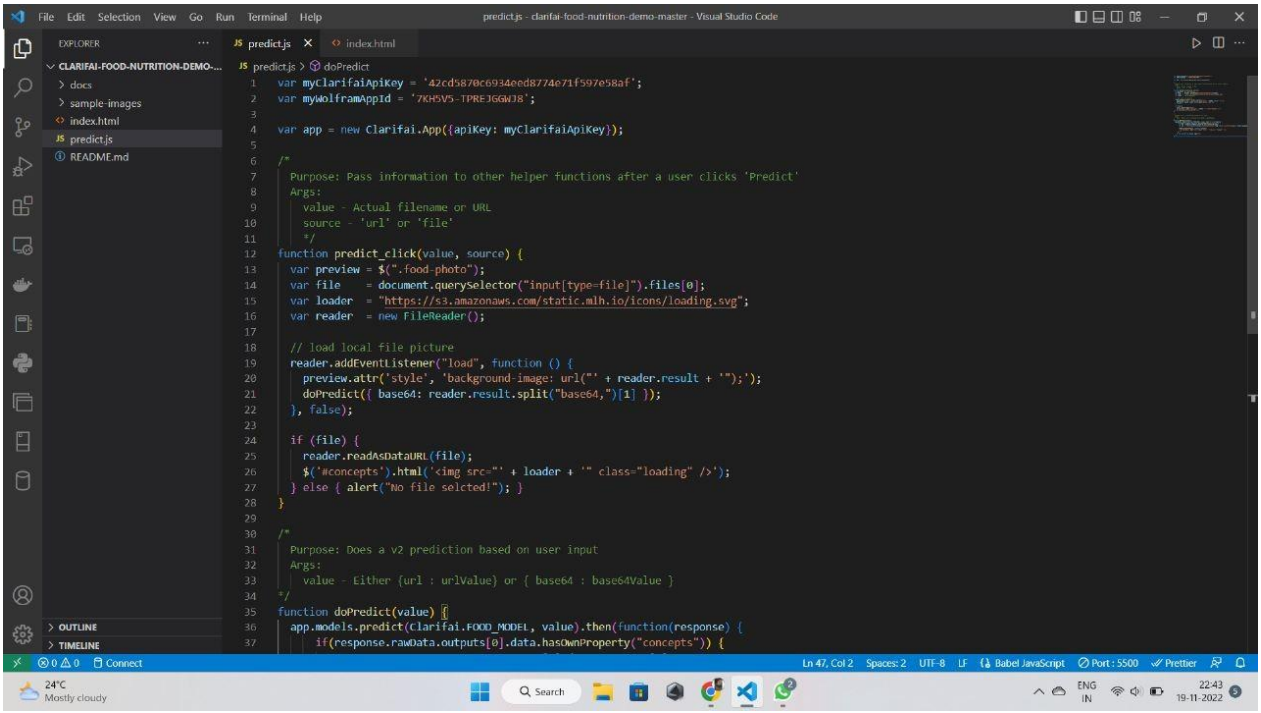
File Edit Selection View Go Run Terminal Help
predict.js - clarifai-food-nutrition-demo-master - Visual Studio Code
EXPLORER
CLARIFAI-FOOD-NUTRITION-DEMO-...
docs
sample-images
index.html
predict.js
README.md
predict.js
index.html
predict.js > doPredict
var myClarifaiApiKey = '42cd5870c6934eed8774e71f597e58af';
var myWolframAppId = '7KH5V5-TPREJGGWJ8';
var app = new Clarifai.App({apiKey: myClarifaiApiKey});
/*
Purpose: Pass information to other helper functions after a user clicks 'Predict'
Args:
value - Actual filename or URL
source - 'url' or 'file'
*/
function predict_click(value, source) {
var preview = $(".food-photo");
var file = document.querySelector("input[type=file]").files[0];
var loader = "https://s3.amazonaws.com/static.mlh.io/icons/loading.svg";
var reader = new FileReader();
// load local file picture
reader.addEventListener("load", function () {
preview.attr('style', 'background-image: url("' + reader.result + '");');
doPredict({ base64: reader.result.split("base64,")[1] });
}, false);
if (file) {
reader.readAsDataURL(file);
$("#concepts").html('');
} else { alert("No file selcted!"); }
}
/*
Purpose: Does a v2 prediction based on user input
Args:
value - Either {url : urlValue} or { base64 : base64Value }
*/
function doPredict(value) {
app.models.predict(Clarifai.FOOD_MODEL, value).then(function(response) {
if(response.rawData.outputs[0].data.hasOwnProperty("concepts")) {
OUTLINE
TIMELINE
Ln 47, Col 2 Spaces: 2 UTF-8 LF Babel JavaScript Port : 5500 Prettier
24°C
Mostly cloudy
Search
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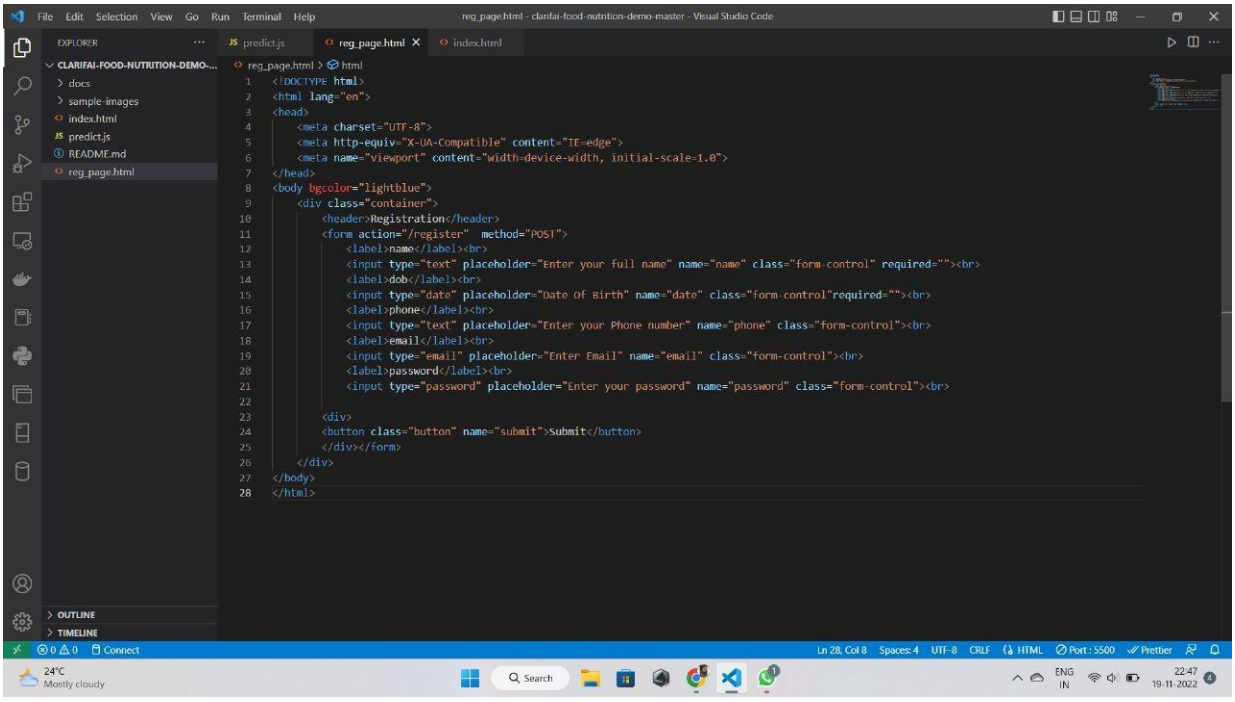
IN
22:43
19-11-2022


File Edit Selection View Go Run Terminal Help
reg_page.html - clarifai-food-nutrition-demo-master - Visual Studio Code
EXPLORER
CLARIFAI-FOOD-NUTRITION-DEMO-...
docs
sample-images
index.html
predict.js
README.md
reg_page.html
predict.js
reg_page.html
index.html
reg_page.html > html
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body bgcolor="lightblue">

<header>Registration</header>
<form action="/register" method="POST">
<label>name</label>
<input type="text" placeholder="Enter your full name" name="name" class="form-control" required="">
<label>dob</label>
<input type="date" placeholder="Date Of Birth" name="date" class="form-control"required="">
<label>phone</label>
<input type="text" placeholder="Enter your Phone number" name="phone" class="form-control">
<label>email</label>
<input type="email" placeholder="Enter Email" name="email" class="form-control">
<label>password</label>
<input type="password" placeholder="Enter your password" name="password" class="form-control">

<button class="button" name="submit">Submit</button>
</form>

</body>
</html>
OUTLINE
TIMELINE
Ln 28, Col 8 Spaces: 4 UTF-8 CRLF HTML Port : 5500 Prettier
24°C
Mostly cloudy
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19-11-2022

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Thank you